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# THE VISUAL COMPOSITION SYSTEM

( RELEASE 1.1 )

FIRE ORGAN™

CEEMAC IS THE LANGUAGE OF FIRE ORGAN,  
WHICH WAS THE 1ST 'SOFT VISUAL ALBUM'

A SYSTEM TO CREATE PERFORMANCE LEVEL  
ABSTRACT VISUALS TO ACCOMPANY MUSIC  
HAS ELUDED OUR GRASP FOR EONS. MY  
PERSONAL SEARCH HAS LED TO CEEMAC.

JAN 1982

BROOKE W BOERING

## OVERVIEW

### CEEMAC DISK #2

(CEEMAC 1.1 MAIN DOCUMENTATION)

THIS DISK IS ONLY ONE OF 6 DISK SIDES, WHICH COMPRISE THE 'OFFICIAL' PUBLIC DOMAIN VERSION OF CEEMAC, THE VISUAL COMPOSITION LANGUAGE. THE DISKS IN THE SET ARE:

- 1-RELEASE 1.1 & TUTORIAL DOCUMENTATION
- 2-DOCUMENTATION FOR RELEASE 1.1
- 3-MAESTRO RELEASE 1.1 & DOCUMENTATION
- 4-MAESTRO 'TARGET' DISK
- 5-BETA CEEMAC 1.6 & DOCUMENTATION
- 6-ONE-KEY DOS & DOCUMENTATION

BECAUSE OF THE UNPREDICTABILITY OF PUBLIC DOMAIN DISTRIBUTION, IT IS POSSIBLE THAT YOU MAY NOT HAVE ALL SIX. ON THE OTHER HAND, IT IS ALSO POSSIBLE TO HAVE LESS THAN THE FULL SET AND STILL DO USEFUL WORK. THE 'PREREQUISITES' FOR EACH DISK SIDE ARE LISTED BELOW:

**DISK#1:** CEEMAC 1.1 IS THE ORIGINAL 1982 RELEASE. WITH JUST THIS DISK, YOU CAN GET A FEEL FOR THE LANGUAGE AND ACTUALLY COMPOSE SOME 'VISUAL SCORES'. BUT YOU REALLY >>SHOULD<< HAVE THE COMPLETE MACHINE READABLE (AND PRINTABLE) REFERENCE MANUAL WHICH APPEARS ON DISK#2.

**DISK#2:** COMPANION DISK FOR DISK#1 (SEE ABOVE).

**DISK#3:** MAESTRO IS A UTILITY PROGRAM (RELEASED IN 1983) FOR PUTTING TOGETHER MULTI-SCORE 'VISUAL ALBUMS' LIKE THE ORIGINAL FIRE ORGAN DEMO DISK (WHICH WAS PLACED INTO PUBLIC DOMAIN IN AUGUST OF 1981). OF COURSE, IT IS USELESS IF YOU HAVEN'T CREATED ANY SUCH VISUAL SCORES SO YOU'LL HAVE TO GET AROUND OF DISK#1 AND, PROBABLY, DISK#2. ANOTHER 'MUST' IS DISK#4 SINCE IT CARRIES A COPY OF THE SKELETON 'ALBUM' NEEDED BY MAESTRO.

**DISK#4:** COMPANION DISK FOR MAESTRO (SEE ABOVE).

**DISK#5:** CEEMAC BETA 1.6 IS THE 1984 'UNOFFICIAL UPGRADE' OF CEEMAC. IT INCLUDES SOME SIGNIFICANT NEW FEATURES AND A FEW SMALL CHANGES. THAT'S THE GOOD NEWS. THE BAD NEWS IS THAT SCORES PRODUCED WITH IT CANNOT BE USED BY MAESTRO TO CREATE VISUAL ALBUMS DUE TO LIMITATIONS WITHIN MAESTRO WHICH DID NOT ANTICIPATE THE STRUCTURE OF THIS NEW VERSION. CAN'T WIN 'EM ALL.

THE NEW FEATURES INCLUDE X- AND Y-AXIS ROTATION, TEXT SUPPORT WITH FULL SCALING AND ROTATION CAPABILITIES, WINDOWS, FOUR MORE XY-COORDINATE SETS, FOLLOWING ERASE OF SHAPES, EXTENDED STACK COMMANDS, FULL-SCREEN RASTERING, ABILITY TO 'BLOAD' FILES OR 'BRUN' OTHER SCORES AND MORE.

**DISK#6:**

**PRE-NOTE:** ALL THE OTHER CEEMAC DISKS HAVE ONE-KEY DOS INSTALLED. WHEN YOU ARE IN DOS MODE, ALL THE POWERFUL ONE-KEY COMMANDS ARE THERE ALONG WITH FAST LOADING, SCROLL CONTROL, CATALOG HEADINGS, ETC.

DISK#6 IS THE ONE-KEY DOS 'INSTALLER' DISK, RELEASED IN MID-1983 AS 'SHAREWARE'. WITH IT, YOU CAN CONVERT MOST UNPROTECTED DOS 3.3 DISKS AND HAVE ALL ITS LIGHTNING FAST FEATURES.

SINCE ONE-KEY DOS IS NOW PART OF PUBLIC DOMAIN CEEMAC, THERE IS NO NEED TO PAY TO USE IT AS SHAREWARE. BACK IN '83, I HAD A BUNCH OF REALLY NEAT DECALS PRINTED THAT CAN BE AFFIXED ABOVE THE DIGIT (0-9) KEYS. USERS WHO FORTY UP THE MEASLY \$9 I ASKED, GOT ONE OF THESE AS A BONUS. AS OF EARLY 1987, I HAVE QUITE A FEW LEFT AND I'LL MAIL ANYONE >>2<< SETS IF THEY WISH TO SEND ME THE \$9. BY THE WAY, //C AND IIGS OWNERS SHOULDN'T BOTHER AS THERE'S INSUFFICIENT SPACE TO STICK THEM ON YOUR APPLE.

FINALLY:

THIS VERSION COULD BE CALLED '8-BIT CEEMAC' BECAUSE OF THE LIMITATIONS ON SCREEN RESOLUTION, COLORS, NUMBER OF VARIABLES, ETC. IN MY HEAD, I HAVE 12-BIT CEEMAC ABOUT 85% DESIGNED. IT WILL SUPPORT 4096 OF >>EVERYTHING<< AND WILL RUN ON THE 'OPEN' MAC-II (OR ??). IF YOU KNOW OF ANYONE INTERESTED IN FUNDING THIS PROJECT (12-BIT CEEMAC), PLEASE HAVE THEM CONTACT ME.

I HOPE YOU FIND CEEMAC ENJOYABLE AND A VIABLE TOOL FOR CREATING THE DYNAMIC, ABSTRACT ENTERTAINMENT GRAPHICS FOR WHICH IT WAS DESIGNED. VISUAL COMPOSITION IS THE ARTFORM OF THE 21ST CENTURY AND WE'VE ONLY JUST BEGUN.

MY BEST,

BROOKE W BOERING  
(dba VAGABONDO ENTERPRISES)  
135 STEPHEN RD  
APTOS CA - 95003

## DISK FILES

### IN GENERAL:

FROM 'HELLO' THRU 'COVER SCORE' ARE A SERIES OF LOCKED FILES WHICH COMPRISE THE CEEMAC SYSTEM. YOU MAY WANT TO ADD TO OR MODIFY THE STANDARD 'LISTS' OR 'SHAPES' FILES AT A LATER DATE. SIMPLY UNLOCK, MODIFY AND RELOCK AS YOUR NEEDS REQUIRE.

### 'AUDREY' FILES:

THESE 'BRUN'ABLE BINARY-TEXT FILES ARE CALLED 'AUDREY' FILES SINCE THEY WERE CREATED WITH THE ARTHUR/AUDREY DOCUMENTATION SYSTEM. THEY CAN BE RECOGNIZED BY A PRECEDING '@' SIGN. PRESUMABLY YOU'VE READ THE @OVERVIEW FILE. OPTIONALLY, READ THE @HISTORY OF CEEMAC. UNLESS YOU FEEL YOU'RE A REAL PRO, BE CERTAIN TO READ (AND, PERHAPS, PRINT) THE @TUTORIAL-1 FILE. IT PROVIDES A PAINLESS 'FIRST EFFORT' AT WRITING A SIMPLE CEEMAC SCORE.

THE ENTIRETY OF DISK #2 IS DEVOTED TO AUDREY FILES FOR THE COMPLETE DOCUMENTATION OF RELEASE 1.1. IT WILL BOOT DIRECTLY INTO THE @OVERVIEW FILE. AFTER READING IT (OR NOT) DO A CTRL-C TO DROP INTO DOS. A 'CATALOG' COMMAND WILL THEN SHOW ALL THE DOCUMENTATION FILES ON DISK #2. YOU CAN 'BRUN' THE @TUTORIAL-11 FILE, AND THEN THE OTHERS IN THEIR NATURAL ORDER. SINCE THEY >>ARE<< THE EQUIVALENT OF THE CEEMAC REFERENCE MANUAL, YOU SHOULD ALSO PRINT THEM AS YOUR 'ELBOW REFERENCE'.

### TEXT SUPPORT BY CEEMAC:

CEEMAC'S PRIMARY THRUST AND REASON FOR BEING IS THE CREATION OF ABSTRACT ART. I AM AWARE THAT ONLY TIME WILL TELL THE FULL RANGE OF USE TO WHICH IT WILL BE PUT. THE TEMPTATIONS TO USE IT FOR REPRESENTATIONAL GRAPHICS ARE VERY REAL AND, TO SOME EXTENT QUITE REASONABLE. AFTER ALL, SIMPLY BEING ABLE TO USE THE SAME SYNTAX FOR CREATING STILL SCENES, POSTERS, GRAPHS, ETC. CARRIES THE FORCE OF LOGIC.

BUT DO NOT EXPECT TOO MUCH AS I HAVE EXPENDED PRECEIOUS LITTLE EFFORT TO SUPPORT SUCH ENDEAVOR. AS SORT OF A LAST MINUTE IDEA, HOWEVER, I'VE CREATED A FULL 96-CHARACTER ASCII SET OF SHAPES AND PLACED THEM IN A FILE CALLED T-SHAPES.

I THEN WROTE A SCORE CALLED T-SCORE.1. TO GET THIS DEMO TO RUN, GET TO DOS (CTRL-C) AND LIST THE CATALOG. THEN 'BLOAD T-SHAPES' FOLLOWED BY A 'BRUN T-SCORE.1'. EXAMINING THE SCORE WITH THE EDITOR SHOULD REVEAL MUCH ABOUT HOW TO MANIPULATE THIS TEXT SHAPE TABLE. NOTE THAT THE SHAPE NUMBERS EQUATE TO THEIR ASCII EQUIVALENTS (HI-BIT ON).

A SECOND DEMO INVOLVES KEEPING THE SAME SHAPE TABLE AND BLOADING THE FILE NAMED 'T-LISTS.2'. THEN 'BRUN T-SCORE.2' AND YOU CAN SEE ANOTHER POSSIBILITY FOR MANIPULATING TEXT IN CEEMAC.

IT IS LEFT TO THE INTERESTED COMPOSER TO EXPLORE THE APPLICATION OF ROTATION AND SCALING TO VARY THE SIZE AND ORIENTATION OF CHARACTERS ON THE SCREEN.

### TUTORING FILES:

NEXT THERE ARE A COUPLE OF INTERACTIVE SCORES DESIGNED TO AIDE IN UNDERSTANDING THE CONCEPTS OF SPLINES. THESE REQUIRE THE USE OF PADDLES OR A JOYSTICK TO MANIPULATE THE 'FORCES' THAT GIVE SHAPE TO THESE COMPLEX CURVES.

THE 'TUTOR' FILES ARE TO BE USED WITH THE TUTORIAL. THEY ARE QUITE SMALL AND CAN BE DELETED ONCE THEIR PURPOSE IS SERVED.

### SAMPLE SCORES FROM FIRE ORGAN:

NEXT FOLLOWS A GROUP OF SCORES NAMED SIMPLY 'K1' THRU 'K2'. THESE ARE THE FAMILIAR 35 FROM THE FIRE ORGAN ALBUM, ONLY HERE YOU CAN 'BRUN' THEM, CTRL-A

INTO THE CEEMAC EDITOR AND EXPLORE ALL THEIR HIDDEN TRICKS. AS YOU MIGHT  
GUESS, 'K1' MEANS 'KEY 1' AND SIMPLY MAKES FOR EASIER KEYING.

## TUTORIAL-1

### PRELIMINARY:

THIS TUTORIAL PRESUMES THAT THE READER HAS A MINIMAL UNDERSTANDING OF APPLE DOS 3.3 COMMANDS AS WELL AS SOME ACQUAINTANCE WITH THE 'BASIC' LANGUAGE.

THE FOLLOWING POINTS WILL HELP AVOID POSSIBLY FRUSTRATING OCCURANCES.

BEFORE 'BOOTING UP' THE CEEMAC DISKETTE, SET YOUR PADDLES TO 'HARD RIGHT' AND LEAVE THEM THERE UNTIL INSTRUCTED OTHERWISE, PLEASE. IF YOU HAVE NO PADDLES, DON'T WORRY. IF YOU HAVE A 'CENTERING JOYSTICK', IT MIGHT BE BEST TO DISCONNECT IT DURING THE TUTORIAL ALTHOUGH NOT MANDATORY.

FROM CEEMAC (EITHER MODE), YOU CAN GET TO DOS BY A CTRL-C COMMAND. PAY NO ATTENTION IF SOME 'BSAVE' LINES APPEAR AS THESE ARE MERELY OPTIONAL AIDS NOT APPLICABLE TO THE TUTORIAL.

DURING 'EXECUTION' (WHEN THE GRAPHICS SCREEN IS ON VIEW), THE SPACE BAR WILL FREEZE (AND UNFREEZE) THE ACTION.

IF, AT ANY TIME YOU FIND YOURSELF IN DOS OR HAVE HIT THE 'RESET' BUTTON, REENTER CEEMAC BY A 'CALL 2048'.

### SOME CONVENIENT TERMINOLOGY:

PROGRAMS CREATED USING THE CEEMAC LANGUAGE ARE CALLED 'VISUAL SCORES' (OR JUST 'SCORES'). A PRIMARY DESIGN FEATURE IS THE SPEED AND EASE WITH WHICH YOU, THE PROGRAMMER (OR 'VISUAL COMPOSER'), CAN MOVE BACK AND FORTH BETWEEN CREATING OR MODIFYING THE SCORE AND SEEING THE RESULT. THIS 'TRIAL AND WOW' COMPOSING SCHEME HAS BEEN SELECTED FOR THE PRIMARY PURPOSE OF MAINTAINING A CONSISTENT MOOD DURING THE CREATIVE PROCESS. MASTERY OF A FEW MAIN EDITING FEATURES CAN MAKE THIS PROCESS QUITE PAINLESS.

CEEMAC MAY BE VIEWED AS A 'FAMILY' WHERE EACH MEMBER IS ASSIGNED CERTAIN 'CHORES'. PRESENT MEMBERS WOULD BE:

EDGAR, THE EDITOR  
CINDY, THE PROOF READER  
WILBUR, THE GUESSER

WHILE THESE 'CHARACTERS' ARE HANDY IN VISUALIZING HOW CEEMAC OPERATES, THEY ARE NOT FOUND IN OTHER CEEMAC DOCUMENTATION. EDGAR IS COVERED AS EITHER 'THE EDITOR' OR 'EDIT MODE'. WHILE THE FUNCTIONS OF CINDY AND WILBUR ARE USUALLY EXPRESSED AS 'ERROR CHECKING' AND 'DEFAULT HANDLING', 'EXECUTION MODE', HOWEVER, IS A COMMON TERM AND ALWAYS REFERS TO THE GRAPHICS SCREEN DISPLAY WHERE YOUR SCORES 'PERFORM'.

### THE GRAPHICS SCREEN:

CEEMAC USES AN X/Y COORDINATE SYSTEM TO LOCATE POINTS ON THE GRAPHICS SCREEN. THE SMALLER THE VALUE FOR 'X', THE CLOSER THE POINT TO THE LEFT EDGE. THE SMALLER THE VALUE OF 'Y', THE CLOSER TO THE BOTTOM OF THE SCREEN. THE HIGHEST X OR Y VALUE IS #255 (HEX-#FF). THIS DOESN'T CORRESPOND TO APPLE'S STANDARDS BUT RATHER REFLECTS A 'GENERIC' MAPPING USEABLE ON OTHER COMPUTERS.

### STARTING:

AFTER 'BOOTING UP' THE CEEMAC DISK, DO A CTRL-C TO DOS AND RUN TUTOR 1. YOU WILL SEE A SIMPLE STRAIGHT LINE DRAWN ON THE SCREEN. (IF THE SCREEN SEEMS OTHERWISE, DO TWO CTRL-A'S IN A ROW). YOU ARE NOW IN 'EXECUTION MODE' OF CEEMAC. HIT CTRL-A AND YOU ARE IN 'EDIT MODE' (EDGAR) AND SHOULD SEE THE FOLLOWING:

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>SCORE: TUTOR 1
      BLINE [0;0]
      CEEMAC REL 1.1
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CEEMAC REL 1.1  
CEEMAC REL 1.1  
CEEMAC REL 1.1  
CEEMAC REL 1.1  
CEEMAC REL 1.1

----- ( C E E M A C ) -----

HITTING CTRL-A AGAIN JUMPS TO EXECUTION, AND YET AGAIN RETURNS US TO EDGAR.  
DO THIS SOME MORE IF YOU LIKE.

WE'VE LEARNED:-

- BOOTING THE DISK PUTS US IN 'EXECUTION' MODE;
- CTRL-A LETS US FLIP BACK AND FORTH BETWEEN EXECUTION MODE AND EDITING MODE (EDGAR).

WE NOW KNOW THAT EDGAR HAS OVERALL RESPONSIBILITY FOR EVERYTHING THAT  
HAPPENS IN EDITING MODE. CINDY AND WILBUR ASSIST AS THE OCCASION DEMANDS.

HAVING FLIPPED BACK AND FORTH A FEW TIMES, YOU PROBABLY NOTED THAT THE LINE  
WAS DRAWN WITH DIFFERENT LENGTHS AND IN DIFFERENT PLACES. IF WE LOOK AT THE  
SCORE (EDGAR'S DOMAIN) ITS CLEAR THAT NO ENDPOINTS FOR THE LINE HAVE BEEN  
GIVEN. WILBUR (THE GUESSER) JUST DECIDED TO DRAW THE LINE FROM THE MIDDLE OF  
THE SCREEN TO SOME RANDOM POINT.

AT THIS TIME, LETS SEE HOW EDGAR LETS US MOVE ABOUT IN THE SCORE. WE ARE  
ABLE TO MOVE (OR 'SCROLL') UP AND DOWN WITH THE UP- AND DOWN-ARROW KEYS (USE  
'RETURN' AND '-' ON THE OLDER APPLES). SIMPLY START HITTING THEM AND WATCH  
WHAT HAPPENS. NOTE THAT WE CAN MOVE UP BUT NOT ABOVE THE TOP LINE AND DOWN  
BUT NOT BELOW THE FIRST 'CEEMAC REL 1.1' LINE (THE 'FENCE'). THE SCORE MUST  
RESIDE BETWEEN THESE TWO 'ANCHOR' STATEMENTS WHICH CONTAIN SOLELY  
IDENTIFICATION INFORMATION.

WE'VE LEARNED:-

- 'EDGAR' USES THE 'RETURN' KEY TO MOVE THE ARROW DOWN 1 STATEMENT;
- ...AND THE '-' KEY TO MOVE THE ARROW UP 1 STATEMENT;
- 'WILBUR' WILL GUESS AT MISSING INFORMATION, IF HE CAN;
- 'CINDY' WILL STOP US FROM GETTING PAST THE TOP AND BOTTOM STATEMENTS.

HAVING 'EXECUTED' THIS SCORE A FEW TIMES, LETS TRY TO CHANGE A THING OR  
TWO. USING THE UP AND DOWN KEYS, MOVE THE FLASHING ARROW TO THE 'BLINE'  
STATEMENT. NOW HIT THE 'D' KEY AND WE HAVE JUST 'D'ELETED IT! EXECUTE  
(CTRL-A) AND WE'RE GREETED WITH A BLANK SCREEN. BACK TO EDGAR AND OUR 'FENCE'  
STATEMENT SEEMS TO HAVE GONE BERSERK. NOT TO WORRY AS EDGAR IS JUST BEING  
PLAYFUL AND WE STILL CANT GET AT THOSE EXTRA BOTTOM LINES ANYWAY.

THE IMPORTANT THING IS WE NOW KNOW HOW TO DELETE A STATEMENT. HOWEVER,  
WE'RE GOING TO NEED THAT BLINE, SO LET'S PUT IT BACK. POINT THE ARROW AT THE  
FENCE STATEMENT AND DO AN 'I' (FOR 'INSERT'). THE ARROWHEAD IS NO LONGER  
FLASHING AND INSTEAD WE HAVE A FLASHING BLOCK AT THE START OF AN EMPTY LINE.  
THIS COMMAND ('I') LETS US ADD NEW STATEMENTS AT WILL. RESTORE THE DELETED  
STATEMENT BY TYPING 'BLINE' FOLLOWED BY THE 'RETURN' KEY. NOTE THAT LINE  
EDITING IS SIMILAR TO BASIC BUT NO NUMBERS ARE REQUIRED. IF YOU'VE MADE A  
TYPING ERROR, 'CINDY' (OUR PROOFREADER) WILL CATCH IT. SIMPLY RETYPE 'BLINE'  
(NO QUOTE MARKS, THANK YOU).

WE'VE LEARNED:-

- A 'D' WILL DELETE THE STATEMENT BEING POINTED TO;
- AN 'I' WILL PUT US IN INSERT MODE AND PROVIDE A NEW EMPTY LINE JUST ABOVE  
THE STATEMENT BEING POINTED TO;



- WE CAN TYPE A STATEMENT ON AN EMPTY LINE FOLLOWED BY THE 'RETURN' KEY;
- 'CINDY' WILL CATCH OUR 'SYNTAX' ERRORS;
- THE EXTRA 'FENCE' STATEMENTS DONT CAUSE ANY PROBLEM.

MEANWHILE, WE'VE STILL GOT A FLASHING BLOCK CURSER AND SO, MAY ENTER ANOTHER STATEMENT IF WE CHOOSE. LETS NOT. INSTEAD, HIT EITHER THE 'RETURN' KEY OR THE '←' KEY. NOW WE'RE BACK WITH THE FAMILIAR FLASHING ARROW. A FEW CTRL-A'S WILL CONFIRM THAT WE'VE RESTORED OUR SCORE TO WHERE IT WAS PREVIOUSLY (AND WILBUR IS STILL GUESSING).

OBVIOUSLY WE AREN'T GOING TO LET WILBUR HAVE ALL THE FUN. POINT THE ARROW AT THE BLINE STATEMENT AND HIT THE 'I' KEY. TYPE IN 'X2 = 40' (WITHOUT THE QUOTE MARKS BUT INCLUDE THE BLANKS). I KNOW, EDGAR HAS CHANGED OUR '40' TO '\$40' BUT WE'LL IGNORE THAT FOR THE MOMENT. NOW TYPE 'Y2 = 40' AND WE'VE SPECIFIED ONE X/Y ENDPOINT. LETS GET OUT OF INSERT MODE WITH A 'RETURN' KEY OR '←' KEY. NOW, HITTING CTRL-A WILL REVEAL OUR RESULT.

IF WE POP BACK AND FORTH USING CTRL-A, WE NOTICE THAT THE LINE STAYS IN THE SAME PLACE, SORT OF POINTING TO THE LOWER LEFT CORNER. THE ENDPOINT WHERE X2 = \$40 AND Y2 = \$40 IS THE LOWER END OF THE LINE NOW RATHER THAN RANDOM LIKE IT WAS BEFORE. (REMEMBER THAT 0,0 IS AT THE LOWER LEFT CORNER IN CEEMAC).

X1 AND Y1 ARE COORDINATES OF THE OTHER ENDPOINT BUT IF THEY'RE OMITTED, WILBUR PUTS THAT END OF THE BLINE AT THE MIDDLE OF THE SCREEN (X1 = \$80 AND Y1 = \$80). TO CONFIRM THIS, CTRL-A BACK TO EDGAR AND POINT TO THE BLINE STATEMENT. HIT 'I' AND TYPE IN 'X1 = 80' ON ONE LINE AND THEN 'Y1 = 80' ON THE NEXT LINE. OUT OF INSERT MODE AND BACK TO THE HIRES SCREEN AND NOTHING'S CHANGED! HOWEVER, WE'VE JUST PUT WILBUR OUT OF WORK (TEMPORARILY) BY SPECIFYING BOTH ENDPOINTS NEEDED BY THE 'BLINE' STATEMENT, NAMELY XY1 AND XY2.

WE'VE LEARNED:-

- ONCE WE START ENTERING NEW STATEMENTS (INSERT MODE), EDGAR SUPPLIES AN EMPTY LINE AFTER EACH NEWLY INSERTED STATEMENT.
- WE CAN STOP ENTERING NEW STATEMENTS (EXIT FROM INSERT MODE) BY HITTING THE 'RETURN' OR '←' KEY WHEN AT THE FRONT OF THE EMPTY LINE;
- X2 AND Y2 DEFINE ONE ENDPOINT OF A BLINE;
- X1 AND Y1 DEFINE THE OTHER ENDPOINT OF A BLINE;
- NUMBERS ENTERED ARE DISPLAYED WITH A '\$' IN FRONT.

HERE WE MUST EXPLAIN ABOUT NUMBERS BECAUSE THAT LAST POINT LOOKS PRETTY SILLY. EDGAR NORMALLY ASSUMES YOU HAVE GIVEN HIM A 'HEX NUMBER'. THIS ASSUMPTION IS KNOWN TECHNICALLY AS A 'DEFAULT' AND ALLOWS FOR 'SOFTER' COMPOSING INTERACTION. HOWEVER, WE CAN CHANGE THIS PARTICULAR ASSUMPTION AS EDGAR IS 'EASY' IN THIS MATTER.

LETS WORK IN DECIMAL FOR A WHILE. POINT TO THE 'FENCE' STATEMENT AND DO AN 'I' TO GET AN EMPTY LINE. TYPE IN 'X0 = #71'. NOW EXIT FROM INSERT MODE (YOU RECALL HOW). WOW! EDGAR HAS CHANGED ALL OUR NUMBERS TO DECIMAL. FROM NOW ON, EDGAR WILL ASSUME THAT ANY NUMBER BEING ENTERED IS A DECIMAL NUMBER EVEN IF IT DOESNT HAVE A '#' IN FRONT OF IT. NEXT ENTER 'Y0 = 98' AND EDGAR CONFIRMS THAT YOU MEAN '#98'. IF LATER, YOU ENTER A NUMBER LIKE '\$24', EDGAR WILL RE-EDIT THE SCORE ACCORDINGLY AND REMEMBER THAT NON-PREFIXED NUMBERS ARE NOW 'HEX'. SIMPLE DIGITS 0 THRU 9 ARE NOT PREFIXED AS THEY ARE THE SAME IN BOTH DECIMAL AND HEX.

WE'VE LEARNED:-

- EDGAR CAN WORK IN HEX OR DECIMAL;
- WE CAN CHANGE BACK AND FORTH BY PREFIXING A NUMBER WITH '#' OR '\$';
- X0 AND Y0 APPEAR TO BE ANOTHER SUPPORTED COORDINATE SET.



CEEMAC, OF COURSE, WILL LET US DO MORE THAN JUST DRAW STRAIGHT LINES. FOR ONE THING, IT WILL ALSO 'PLOT' DOTS. TO DO THIS, POINT TO THE FENCE STATEMENT AND DO AN 'I'. NOW ENTER THE STATEMENT 'ADOT'. EXIT FROM INSERT MODE AND POINT TO THE 'ADOT' STATEMENT. WE SEE:

-->ADOT [0;0]

UNTIL NOW, WE'VE IGNORED THE FUNNY '[0;0]' THAT SHOWS UP AFTER THE BLINE STATEMENT AND NOW APPEARS FOLLOWING THE ADOT STATEMENT AS WELL. EACH '0' REPRESENTS A 'PARAMETER' AND THEY ARE NAMED 'PARAM1' AND 'PARAM2'. IF THEY ARE NOT GIVEN, WILBUR 'GUESSES' THEM TO BE ZERO. DOING CTRL-A WE SEE THAT THE SCREEN NOW HAS A DOT JUST ABOVE THE LOWER LEFT END OF OUR BLINE. PARAM1 OF THE ADOT MACRO SPECIFIES WHICH COORDINATE SET (0 FOR XY0, 1 FOR XY1, 2 FOR XY2, 3 FOR XY3) TO USE FOR PLOTTING THE DOT. WE SET XY0 IN THE SCORE PRIOR TO THE ADOT MACRO SO WILBUR DIDN'T GET TO DO HIS STUFF.

WE'VE LEARNED:-

- THERE ARE FOUR COORDINATE SETS SUPPORTED IN CEEMAC 1.1;
- 'MACRO'S ARE A SPECIAL KIND OF STATEMENT THAT CARRY PARAMETERS;
- THE 'ADOT' MACRO WILL PLOT A DOT AT THE POINT INDICATED BY PARAM1.

TO ENTER PARAMETERS, WE NEED TO KNOW WHAT EDGAR EXPECTS. THE BRACKETS (I AND J) LOOK TO EDGAR EXACTLY LIKE BLANKS SO YOU NEVER HAVE TO ENTER THEM (IT WON'T HURT IF YOU DO). THE ';' BETWEEN PARAM1 AND PARAM2 ALSO LOOKS LIKE A BLANK BUT YOU MUST INCLUDE IT (OR A BLANK) WHENEVER ENTERING BOTH PARAMETERS.

POINT AT THE ADOT MACRO AND TYPE 'D' TO DELETE IT. NOW LETS INSERT (BY TYPING 'I') FOLLOWED BY 'ADOT 1'. PARAM1 OF THE ADOT MACRO WILL NOW MEAN 'USE XY1' AND CEEMAC WILL PLOT THE DOT THERE. EXIT INSERT MODE AND CTRL-A TO SEE THE RESULT. WHAT HAPPENED? THE DOT SEEMS TO HAVE DISAPPEARED. REALLY, IT JUST 'OVERPLOTTED' THE BLINE XY1 ENDPOINT.

BACK TO EDGAR FOR A LOOK AT THE SCORE. AS AN OPTIONAL EXERCISE, TRY DELETING THE X0 AND Y0 STATEMENTS AND REENTERING THEM AS X3 AND Y3. ALSO, CHANGE PARAM1 OF THE ADOT MACRO TO 3 INSTEAD OF 1. IF CINDY GIVES YOU A BAD TIME, YOU MAY HAVE OMITTED SOME BLANKS OR TYPED WRONG, ETC. CTRL-A SHOULD REVEAL THE DOT SOMEWHERE ON THE SCREEN DEPENDING ON WHERE YOU SET XY3.

WE LEARNED:-

- HOW TO ENTER MACRO PARAMETERS;
- HOW TO CHANGE STATEMENTS BY DELETING AND THEN INSERTING THE NEW STATEMENT.

CLEARLY, WE WOULD PREFER TO SIMPLY ALTER ONE OR MORE CHARACTERS IN A STATEMENT RATHER THAN COMPLETELY DELETE IT AND RETYPE IT. POINT THE ARROW AT THE 'X2' STATEMENT. NOW HIT THE '-->' KEY. THE ARROW NO LONGER FLASHES AND THE FIRST CHARACTER OF THE STATEMENT (X) DOES. WE ARE IN 'CHANGE' MODE! WE MAY NOW MOVE Laterally USING THE '-->' KEY AND 'STRIKEOVER' ANY CHARACTER WE CHOOSE AS WE GO. AT THE END OF THE LINE, HIT THE 'RETURN' KEY AND THE STATEMENT IS REVISED. CTRL-A TO SEE HOW THE BLINE LOOKS SINCE (I ASSUME) X1 IS DIFFERENT THAN BEFORE.

CTRL-A BACK TO EDGAR AND CHANGE SOME COORDINATE 'VARIABLES' (X1, Y3, X2, ETC.) AT WILL. NOTE THE EFFECT ON THE SCREEN.

WE'VE LEARNED:-

- WE CAN ENTER 'CHANGE' MODE BY HITTING THE '-->' KEY WHEN THE ARROW IS FLASHING;
- WE CAN SCROLL TO THE RIGHT USING THE '-->' KEY AND ALTER CHARACTERS AT WILL WITHIN A STATEMENT;
- LOGICALLY, WE ASSUME THAT THE '<--' KEY WILL LET US SCROLL TO THE LEFT;
- THE X AND Y COORDINATES CAN BE CALLED 'VARIABLES'.

CEEMAC SUPPORTS A WIDE RANGE OF VARIABLES OF WHICH, X0, Y0, X1, ETC. ARE ONLY A FEW. 'V1' IS ANOTHER AND IS AN ARBITRARY NAME MEANING 'VARIABLE 1'. IT CAN BE SET JUST LIKE WE SET X1 OR Y2, ETC. POINT THE ARROW TO THE STATEMENT JUST BELOW THE TOP LINE AND INSERT 'V1 = 1'. IF YOU CTRL-A TO EXECUTE, YOU'LL NOTE THAT THERE IS NO EFFECT ON THE SCREEN. THIS IS BECAUSE V1 IS A 'FREE' VARIABLE AND HAS NO 'IMPLIED' USE. NOTE THAT X1 ISNT TOTALLY FREE IN THE SENSE THAT IT ALWAYS DEFINES THE HORIZONTAL POSITION OF ONE ENDPOINT OF A BLINE, FOR INSTANCE.

TO ILLUSTRATE THE USE OF A FREE VARIABLE, POINT TO THE STATEMENT THAT SETS 'Y2' (Y2 = \$40). CHANGE IT TO READ 'Y2 = V1' AND EXECUTE. THE END POINT OF THE BLINE HAS CHANGED (FROM \$40 TO 1) SHOWING THAT WE CAN USE A VARIABLE TO DEFINE A COORDINATE AS WELL AS A 'LITERAL'.

THERE ARE MANY MORE VARIABLES, MOST WITH SPECIALIZED FEATURES THAT THE VISUAL COMPOSER CAN UTILIZE CREATIVELY. SOME WILL PROVIDE RANDOM VALUES OVER A RESTRICTED RANGE; OTHERS WILL SCALE SHAPES, READ A PADDLE, HOLD A KEYIN, ETC.

WE'VE LEARNED:-

- X1, Y1, X2, ETC. ARE VARIABLES, AS ARE V1, V2, ETC;
- WHEREVER A LITERAL (NUMBER) IS PERMITTED, A VARIABLE CAN BE USED INSTEAD, GIVING ADDED FLEXIBILITY TO THE COMPOSER.

(CONTINUED ON DISK #2 AS TUTORIAL-II)

## TUTORIAL-II

(CONTINUED FROM DISK #1, TUTORIAL-I)

THIS FILE PRESUMES THE NEW VISUAL COMPOSER HAS READ AND WORKED THROUGH TUTORIAL-I, WHICH APPEARS ON DISK #1, OR HAS DECIDED TO SKIP THAT JOURNEY. EITHER WAY, SIMPLY CONTINUING HERE WILL COMPLETE THIS TUTORING SESSION AND YOU WILL BE READY FOR THE REST OF THE CEEMAC DOCUMENTATION.

### MAINLY ABOUT 'LOOPS':

LET'S RESTART WITH THE SAME SCORE. IF IT DOESN'T LOOK LIKE THIS, EITHER RE-EDIT IT ACCORDINGLY OR GET TO DOS (CTRL-C), 'BRUN TUTOR II' AND CALL 2048.

```
>SCORE: TUTOR II
  X2 = $40
  Y2 = $40
  X1 = $80
  Y1 = $80
  BLINE 10;0
  X3 = $47
  Y3 = $62
  ADDOT 13,0
  CEEMAC REL 1.1
----- ( C E E M A C ) -----
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FLIP BACK AND FORTH WITH CTRL-A A FEW TIMES TO GET THE FEELING OF 'WHERE WE ARE'. LOOKING AT THE GRAPHICS SCREEN, YOU MIGHT ASSUME THAT WE HAVE EXECUTED OUR SCORE AND THEN STOPPED. ACTUALLY, WE ARE REDRAWING THE BLINE AND THE DOT IN A VERY FAST 'LOOP'. TO VERIFY THAT THIS IS SO, CTRL-A TO EDGAR AND WE'LL DO AN EXPERIMENT.

POINT THE ARROW AT THE SECOND STATEMENT (X2 = \$40) AND INSERT A NEW MACRO CALLED 'CLEAR'. THIS SHOULD LOOK AS FOLLOWS:

```
  CLEAR 10;0
-->
  X2 = $40
```

NOW EXIT INSERT MODE AND DO A CTRL-A. OUR BLINE AND DOT APPEAR TO BE TURNING ON AND OFF AT A RAPID RATE. INSERTING THE 'CLEAR' MACRO HAS MADE IT APPARENT THAT THE SCORE IS RESTARTING EACH TIME IT COMES TO THE END. WILBUR IS AT IT AGAIN, THIS TIME ASSUMING YOU WISH THIS TO HAPPEN WHEN THE SCORE DOESN'T INDICATE OTHERWISE.

BY NOW YOU KNOW HOW TO FLIP BACK AND FORTH BETWEEN EXECUTION MODE AND EDGAR, AS WELL AS SCROLL UP AND DOWN, GET INTO AND OUT OF INSERT MODE AND CHANGE MODE, ETC. ACCORDINGLY, I WILL SHORTCUT SUCH INSTRUCTIONS IN THE INTEREST OF SAVING SPACE AND TIME.

POINT TO THE X2 STATEMENT AND INSERT (ABOVE IT) 'F' AND THEN EXIT INSERT MODE. THE 'F' STATEMENT (WHICH SHOWS INVERSED) IS CALLED A 'SYMBOL' AND SIMPLY SETS A POINT (FOR EDGAR) IN THE SCORE. SYMBOL-F IS SPECIAL. WHEN IT IS PRESENT, WILBUR WILL LOOP TO IT RATHER THAN THE FIRST STATEMENT WHEN IT COMES TO THE SCORE END. VERIFY THIS BY GOING TO EXECUTION MODE AND NOTING THAT THE SCREEN ISN'T FLASHING NOW. THIS IS BECAUSE THE 'CLEAR' MACRO IS NO LONGER WITHIN THE LOOP.

IF WE MOVE THE 'F' STATEMENT FROM WHERE IT IS (DELETE IT) TO ABOVE THE 'CLEAR' STATEMENT (INSERT IT) WE HAVE THE SAME CONDITION AS WHEN IT WASN'T THERE AT ALL.

WE'VE LEARNED:-

- WILBUR 'GUESSES' THAT WE WOULD PREFER TO LOOP RATHER THAN STOP;
- A 'CLEAR' MACRO WILL ERASE THE ENTIRE SCREEN;

- 'F' IS A SYMBOL STATEMENT WITH THE SPECIAL FUNCTION OF 'RESTART HERE WHEN END-OF-SCORE ENCOUNTERED'.

THERE ARE 16 POSSIBLE SINGLE CHARACTER SYMBOLS IN CEEMAC. THEY ARE 0 THRU 9 AND A THRU F. THEY ARE A PRIMARY MEANS BY WHICH CEEMAC AVOIDS HAVING TO USE LINE NUMBERS. LETS CHANGE OUR 'F' STATEMENT TO AN 'E' STATEMENT AND LOCATE IT BENEATH THE 'CLEAR' MACRO. THE EXECUTION LOOP NOW INCLUDES THE 'CLEAR' MACRO AND THE SYMBOL HAS NO EFFECT. THE SYMBOL 'E' HAS NO SPECIAL FUNCTION.

POINT TO THE STATEMENT FOLLOWING THE 'BLINE' MACRO AND INSERT THIS:

-->GOTO E

EXECUTION NOW EXCLUDES THE DOT SINCE THE STATEMENTS FOLLOWING THE 'GOTO E' STATEMENT NEVER GET A CHANCE TO EXECUTE. THERE IS A LOOP BETWEEN THE 'E' SYMBOL AND ITS CORRESPONDING 'GOTO' STATEMENT WHICH WILL CONTINUE INDEFINITELY. REMEMBER SYMBOL 'F'? WELL, ITS AS IF WILBUR ALWAYS ADDS HIS OWN 'GOTO F' AT THE END OF THE SCORE (BUT WE CANT SEE IT).

A FEW EXTRA NOTES ON SYMBOLS. '0' AND '1' HAVE SOME SPECIAL FUNCTIONS WHICH ARE COVERED IN THE MANUAL. THE OTHERS ARE 'FREE' EXCEPT THAT YOU CAN NEVER 'GOTO' FROM WITHIN A 'DO' LOOP OR A 'SUB' ROUTINE.

WE'VE LEARNED:-

- SYMBOLS ARE SINGLE CHARACTER STATEMENTS THAT LET US 'GOTO' THEM;
- SOME SYMBOLS (0, 1, F) HAVE SPECIAL USES WITHIN CEEMAC;
- 'GOTO' STATEMENTS CANT JUMP OUT OF LOOPS OR SUBS;
- THERE ARE THINGS CALLED 'DO' LOOPS AND 'SUB' ROUTINES.

LETS LOOK AT 'DO' LOOPS. FIRST WE'LL CLEAN UP OUR SCORE BY 'DELETING THE 'E' SYMBOL AND THE 'GOTO E' STATEMENT. AFTER THAT, MOVE THE 'CLEAR' STATEMENT FROM WHERE IT IS (BY DELETING IT) TO JUST IN FRONT OF THE BLINE STATEMENT (BY INSERTING IT). NEXT, POINT TO THE 'CLEAR' MACRO AND INSERT A 'DO' STATEMENT. THEN POINT TO THE 'CEEMAC' STATEMENT AND INSERT AN 'AGAIN' STATEMENT. EXECUTING REVEALS THAT THERE IS NO DIFFERENCE; WE HAVE SIMPLY SPECIFIED WITH STATEMENTS WHAT WILBUR WOULD HAVE DONE ANYWAY.

BACK WITH EDGAR, NOTE THAT THE 'DO' LOOP IS 2-SPACE INDENTED (TO AID VISUALIZATION). IN CEEMAC, THE NORMAL LOOP STARTS WITH A 'DO' AND ENDS WITH AN 'AGAIN'. WHILE THERE ARE OTHER WAYS TO CONTROL THESE LOOPS (CALLED CONDITIONAL EXPRESSIONS), A MOST POPULAR TECHNIQUE IS TO SUBSTITUTE A 'FOR' STATEMENT FOR THE 'DO' STATEMENT. IT IS MUCH THE SAME AS THE 'FOR' STATEMENT IN THE 'BASIC' LANGUAGE IN THAT IT MUST BE FOLLOWED BY A VALUE THAT DETERMINES THE NUMBER OF LOOPS TO EXECUTE. CHANGE THE 'DO' STATEMENT TO THE FOLLOWING:

-->FOR 9

EXECUTING THIS DOESN'T CHANGE ANYTHING SO (BACK WITH EDGAR) LETS RELOCATE THE 'AGAIN' STATEMENT BY DELETING IT AND INSERTING IT BELOW THE BLINE STATEMENT (REPEAT, BELOW THE BLINE STATEMENT). EXECUTION SHOWS THAT THE STATEMENTS WITHIN THE LOOP ARE REPEATING (9 TIMES) AND THEN THE 'ADOT' MACRO CAN EXECUTE ONCE. SINCE THIS IS ALL WITHIN THE OVERALL (IMPLICIT) LOOP OF CEEMAC, THE ENTIRE SEQUENCE WILL CONTINUE UNTIL YOU STOP IT.

WE'VE LEARNED:-

- 'DO' LOOPS IN CEEMAC CAN ALSO START WITH A 'FOR' STATEMENT;
- 'FOR' STATEMENTS REQUIRE A VALUE TO DETERMINE THE NUMBER OF LOOP EXECUTIONS;
- SO FAR THIS ISNT MUCH DIFFERENT THAN THE BASIC LANGUAGE LOOPS;
- ALSO, THERE HASN'T BEEN MUCH SCREEN ACTION.

OK, TIME FOR SOME ACTION. SINCE WE NOW HAVE A LOOP THAT DRAWS A BLINE, LETS MAKE THE BLINE MOVE. POINT TO THE 'AGAIN' STATEMENT BECAUSE WE'RE GOING TO INSERT SOMETHING IMMEDIATELY ABOVE IT. NOW INSERT 'X1 - 4'. RIGHT HERE LETS TAKE A LITTLE SIDE TRIP.

EDGAR ALWAYS ASKS CINDY TO 'PROOF' YOUR INPUT. CINDY, BEING RATHER BRIGHT, ACCEPTS SHORTHAND STATEMENTS LIKE 'X1 - 4' AND 'KNOWS' THAT IT MEANS 'X1 = X1 - 4' AND RE-EDITS IT ACCORDINGLY. SHE IS ALSO SMART ENUF TO ACCEPT PARAMETERS WITH OR WITHOUT THE BRACKETS (I AND J). WHEN YOU ENTER SOMETHING THAT IS INCOMPLETE OR MAKES NO SENSE TO HER, SHE ASKS WILBUR IF HE CAN TAKE A GUESS. IF ALL ELSE FAILS, SHE INFORMS YOU OF YOUR ERROR. AS YOU CAN SEE, ITS A FAMILY BUSINESS.

MEANWHILE, LETS EXECUTE OUR LATEST REVISION. THE BLINE IS NOW SKIDDERING BACK AND FORTH ALONG A NARROW TRACK. LETS INCREASE THE LOOP LENGTH BY CHANGING THE 'FOR' STATEMENT TO 'FOR 1F' AND EXECUTE IT. THE PATH IS WIDER AND THE BLINE IS DRIVEN LONGER BEFORE THE DOT IS DRAWN. NOTE THAT THE DOT IS VERY HARD TO NOTICE NOW. LETS CHANGE HIM TO A BOX. CAN WE DO THAT? IN DEEMAC, YOU CAN TRY MOST ANYTHING! IN THIS CASE, POINT TO THE 'ADOT' MACRO AND RE-EDIT IT TO READ 'ABOX' (WITH A ZERO PARAM1) NOW EXECUTE. NEAT, EH?

WE'VE LEARNED:-

- CHANGING A COORDINATE EACH TIME THRU A LOOP WILL CAUSE THE FIGURE (LINE, DOT, BOX) TO APPEAR IN A DIFFERENT POSITION ON THE SCREEN;
- SOME 'SHORTHAND' ENTRY OF STATEMENTS IS ACCEPTABLE;
- 'ABOX' IS ANOTHER DEEMAC 'MACRO'.

LOOK CLOSELY AND YOU'LL SEE THAT THE BOX IS BEING DRAWN 'FILLED IN'. THAT HAPPENS WHEN PARAM1 IS ZERO. LETS RE-EDIT THE 'ABOX' STATEMENT TO MAKE PARAM1 \$80 AND RE-EXECUTE THE SCORE. NOW THE BOX IS OPEN (OR 'WIREFRAME'). THE MAIN DOCUMENTATION TELLS ABOUT PARAM1 FOR 'ABOX' AND WHY IT IS POSITIONED WHERE IT IS.

OK, LETS STEP UP THE ACTION. BACK TO EDGAR, POINT THE ARROW AT THE AGAIN STATEMENT (YES, AGAIN) AND INSERT THE FOLLOWING:

-->Y2 + 3

EXECUTE AND OUR BLINE HAS BOTH ENDS MOVING NOW AND THE BOX BEING DRAWN AT A DIFFERENT PLACE.

NEXT, DELETE THE 'CLEAR' MACRO AND INSERT IT JUST ABOVE THE 'FOR \$1F' STATEMENT (OUTSIDE OUR LOOP). EXECUTE AND NOW WE'RE STARTING TO GET SOME INTERESTING STUFF. HOWEVER, ITS GOING TOO FAST. IT WOULD BE NICE TO HAVE IT WAIT A LITTLE AT THE END BEFORE CLEARING THE SCREEN AND REPEATING THE SCORE. TO DO THIS, INSERT THE FOLLOWING STATEMENT JUST ABOVE THE 'DEEMAC' STATEMENT:

-->WAIT 1

EXECUTION NOW 'WAITS' 1 SECOND BEFORE WILBUR DECIDES ITS TIME TO RESTART THE SCORE. BY THE WAY, PARAM2 OF THE 'WAIT' MACRO REPRESENTS N/256THS OF A SECOND, THUS ALLOWING FINE ADJUSTMENT.

WE'VE LEARNED:-

- PARAM1 OF 'ABOX' EFFECTS WHETHER THE BOX IS 'PAINTED IN' (AND MAYBE OTHER THINGS AS WELL);
- MOVING LINES (AND BOXES) AROUND THE SCREEN IS DONE BY INCREMENTING AND/OR DECREMENTING COORDINATES WITHIN A LOOP;
- IF WE KEEP THE 'CLEAR' MACRO OUT OF OUR LOOP, WE CAN 'BUILD' A PLANER IMAGE ON THE SCREEN;
- 'WAIT' IS A MACRO THAT HELPS TIME OUR DISPLAYS.

LETS RENAME THIS SCORE. POINT TO THE TOP STATEMENT AND, SCROLLING PAST THE 'SCORE;' PORTION (PLUS ONE BLANK), TYPE ANYTHING YOU WANT (CINDY WONT LET YOU EXCEED THE LINE LENGTH). AFTER HITTING THE RETURN, STAY IN INSERT MODE AND ENTER THE FOLLOWING:

-->: AUTHOR: (YOUR NAME)

NEITHER OF THESE ACTIONS WILL HAVE ANY EFFECT ON THE SCORE EXECUTION. THEY MERELY DEMONSTRATE THAT WE CAN TITLE A SCORE AND INCLUDE COMMENTS.

AT THE VERY BEGINNING OF THIS TUTORIAL, YOU WERE TOLD TO BE SURE THE PADDLES WERE KEPT AT 'HARD RIGHT' UNTIL INSTRUCTED OTHERWISE. WELL, HERE WE ARE AT 'OTHERWISE'. WHILE EXECUTING, GRADUALLY ROTATE PADDLE-0 TO THE LEFT AND OBSERVE THE EFFECT ON THE SCREEN. IT SLOWS DOWN. AT, OR NEAR, THE EXTREME LEFT POSITION (HARD LEFT), THE ACTION STOPS ENTIRELY AND ONLY REVERSING THE PADDLE WILL RELIEVE IT.

THIS SPEED CONTROL USING PADDLE-0 IS CALLED AN 'EXECUTION TIME CONTROL' AND IS THE 'DEFAULT' CONDITION. OTHER SUCH CONTROLS ARE EXPLAINED IN THE MANUAL. THE COMPOSER CAN 'LOCK OUT' THIS FUNCTION FOR PADDLE-0 IF HE CHOOSES BY PUTTING A 'SPEED' STATEMENT NEAR THE TOP OF HIS SCORE (JUST BELOW THE 'SCORE;' STATEMENT). DO THIS AND NOW THE POSITION OF PADDLE-0 HAS NO EFFECT ON EXECUTION SPEED.

WE'VE LEARNED:-

- WE CAN NAME OUR SCORES AND INCLUDE COMMENTS AT WILL;
- THERE ARE 'EXECUTION TIME' CONTROLS THAT CAN EFFECT HOW A SCORE PERFORMS;
- PADDLE-0 CONTROLS EXECUTION SPEED UNLESS A 'SPEED' MACRO IS INCLUDED IN THE SCORE.

LETS HAVE SOME FUN. POINT AT THE BLINE STATEMENT AND CHANGE IT LIKE SO:

-->BLINE [0;1]

PARAM2 IN BLINE, ADOT, ABOX, SPLINE AND SHAPE MACROS, SPECIFIES THE SYMMETRY OF THE FIGURE TO BE DRAWN. WHILE YOU CAN ENTER ANY VALUE HERE, ONLY 0-#B ARE SPECIFICLY MEANINGFUL (WILBUR TAKES OVER FOR OTHER VALUES). THE EFFECTS CAN BE UNEXPECTED AND QUITE SPECTACULAR AT FIRST.

WE'VE LEARNED:-

- PARAM2 OF THE FIGURE DRAWING MACROS DETERMINES WHAT TYPE OF SYMMETRY WE GET.

CONCLUSION:

AS YOU READ THE MAIN DOCUMENTATION FILES, YOU'LL NOTE THAT THEY ARE FULL OF THE KIND OF INFORMATION JUST PRESENTED BUT WITHOUT QUITE SO MUCH 'HAND HOLDING'. THERE ARE EDITING CONVENIENCES (OVERDRIVE AND NON-DESTRUCTIVE EXITS).. MORE FIGURE DRAWING MACROS (SPLINES AND SHAPES).. POWERFUL VARIABLES AND HANDY SERVICE MACROS (SWAP AND EXTEND).. 'FOLLOWING ERASE' CAPABILITY AND COLOR CONTROL.. 'STAR'S AND 'GRID'S.. SCALING AND ROTATION FOR SHAPES.. MUSIC INTERFACES AND 'MATH-A-LOGICAL' OPERATIONS.. AND MUCH MORE.

OBVIOUSLY, THIS TUTORIAL COULD HAVE GONE ON AND ON. BUT WHAT'S THE POINT. SOME 40 EXAMPLE SCORES CAN BE FOUND ON DISK #1. THEY DRAMATIZE MOST OF CEEMAC'S MAJOR FEATURES AND CAN BE RUN AND EDITED TO WHATEVER EXTENT YOU WISH. CEEMAC IS MERELY THE TOOL, HERE ONLY TO BE EXPLORED AND EXPLOITED AS THE CREATIVE BEND OF THE COMPOSER DICTATES.

WELCOME TO THE WORLD OF VISUAL COMPOSITION!

250

## CATALOG DISK

SLOT 6 DRIVE 1

## DISK VOLUME 254

A 002 @ Christella Enterorise @  
 B 015 @DISK FILES  
 B 011 @HISTORY OF CEEMAC  
 B 017 @OVERVIEW  
 B 056 @TUTORIAL-1  
 \*B 017 AUDREY  
 \*B 025 CEEHI  
 \*B 026 CELO  
 B 038 CEEMAC  
 \*B 033 COVER IMAGE  
 \*B 003 COVER SCORE  
 A 009 HELLO  
 A 003 HELLO.NO DOC  
 B 006 K1  
 B 005 K2  
 B 005 K3  
 B 005 K4  
 B 003 K5  
 B 004 K6  
 B 006 K7  
 B 006 K8  
 B 006 K9  
 B 005 KA  
 B 005 KB  
 B 006 KC  
 B 006 KD  
 B 004 KE  
 B 006 KF  
 B 004 KG  
 B 004 KH  
 B 006 KI  
 B 005 KJ  
 B 003 KK  
 B 003 KL  
 B 004 KM  
 B 004 KN  
 B 003 KO  
 B 004 KP  
 B 006 KQ  
 B 006 KR  
 B 006 KS  
 B 006 KT  
 B 006 KU  
 B 005 KV  
 B 006 KW  
 B 005 KX  
 B 004 KY  
 B 005 KZ  
 B 006 LISTS  
 \*B 002 MVFP  
 B 014 SHAPES  
 B 003 SPLINES.1  
 B 004 SPLINES.2  
 \*A 005 START.A  
 B 006 T-LISTS.2  
 B 006 T-SCORE.1  
 B 005 T-SCORE.2  
 B 008 T-SHAPES  
 \*B 002 TUTOR 1  
 \*B 002 TUTOR 11

SECTORS FREE:5 USED:555 TOTAL:560

251

## CATALOG DISK

SLOT 6 DRIVE 1

## DISK VOLUME 254

A 002 @ Christella Enterorise @  
 B 009 @COLORS  
 B 006 @DEDICATION  
 B 044 @EDITING-I  
 B 029 @EDITING-II  
 B 028 @EXECUTION COMMANDS  
 B 026 @INTRODUCTION  
 B 010 @LISTS  
 B 032 @MACROS  
 B 017 @MATH-A-LOGICAL  
 B 024 @MUSIC  
 B 017 @OVERVIEW  
 B 013 @REVERSING  
 B 017 @SCREEN CONCEPTS  
 B 041 @SHAPES  
 B 028 @SPLINES  
 B 010 @STACKS  
 B 021 @SYMMETRY



B 005 @TITLE PAGE  
 B 048 @TUTORIAL-II  
 B 036 @VARIABLES  
 \*B 017 AUDREY  
 A 003 HELLO  
 \*B 002 MVFP

SECTORS FREE:11 USED:549 TOTAL:560

SLOT 6 DRIVE 1

252 CATALOG DISK  
DISK VOLUME 254

A 002 @ Christella Enterorise @  
 B 029 @DDCU-I  
 B 038 @DDCU-II  
 B 017 @OVERVIEW  
 \*B 017 AUDREY  
 \*B 050 FP  
 A 009 HELLO  
 A 003 HELLO.NO DOC  
 \*B 020 MAEHI  
 \*B 011 MAELO  
 \*B 002 MVFP  
 A 003 START.A  
 T 047 21GGY

SECTORS FREE:248 USED:312 TOTAL:560

SLOT 6 DRIVE 1

253 CATALOG DISK  
DISK VOLUME 254

A 002 @ Christella Enterorise @  
 B 029 BRUN ME IF I'M A MYSTERY  
 \*B 026 CEEHI  
 \*B 026 CEELD  
 B 033 COVER  
 \*A 002 HELLO  
 A 003 HELLO.CHOOSE  
 \*B 002 MVFP  
 B 029 NOTES  
 B 036 SPACK  
 \*A 005 START.A

SECTORS FREE:303 USED:257 TOTAL:560

SLOT 6 DRIVE 1

254 CATALOG DISK  
DISK VOLUME 254

A 002 @ Christella Enterorise @  
 B 055 @DDCU-I  
 B 038 @DDCU-II  
 B 017 @OVERVIEW  
 \*B 017 AUDREY  
 \*B 008 CAMERA.DV  
 \*B 050 CEEDIT  
 \*B 052 CEEHI  
 \*B 025 CEELD  
 \*B 018 CEENAM  
 B 033 COVER  
 B 004 COVER SCORE  
 B 002 DEMO CLRSTK.SHAPES  
 B 002 DEMO DIVIDE CHANGES  
 B 004 DEMO LINETX & VSYM  
 B 003 DEMO MOD-7 COLORS  
 B 002 DEMO NEW XY-COORDS  
 B 003 DEMO PUSH/PULL  
 B 005 DEMO RASTER  
 B 003 DEMO ROTS.XYZ  
 B 003 DEMO SHAPE STACK  
 B 003 DEMO SPRASING  
 B 004 DEMO TEXT  
 \*B 008 DISKXFR.DV  
 A 009 HELLO  
 A 003 HELLO.NO DOC  
 B 006 LISTS  
 \*B 002 MVFP  
 \*B 003 ONEK.E  
 \*B 008 PROJECT.DV  
 B 002 SHAPE.PEA  
 B 014 SHAPES  
 \*A 004 START.A  
 B 006 T-LISTS  
 B 008 T-SHAPES  
 B 002 TEST BUTTONS  
 B 004 THE PEACE SCORE  
 \*B 002 UDEF

SECTORS FREE:62 USED:498 TOTAL:560

SLOT 6 DRIVE 1

255 CATALOG DISK  
DISK VOLUME 254

A 0002 @ Christella Enterprise @  
 A 011 HELLO  
 I 018 MAESTRO  
 B 037 MAESTRO.DAT1  
 B 037 MAESTRO.DAT2  
 B 037 MAESTRO.DAT3  
 B 037 MAESTRO.DAT4  
 B 037 MAESTRO.DAT5  
 A 003 MUSIC NOTES WITH OCTAVE NOS.  
 A 003 PLAY THAT TONE AGAIN SAM!  
 A 005 SOME WHERE OVER THE RAINBOW  
 A 003 SOUND BY WAGNER  
 B 002 SOUND1(CALL2921)  
 B 002 SOUND10(CALL5472)  
 B 002 SOUND11(CALL4307)  
 B 002 SOUND12(CALL5334)  
 B 002 SOUND13(CALL4661)  
 B 002 SOUND14(CALL4827)  
 B 002 SOUND15(CALL3969)  
 B 002 SOUND16(CALL4993)  
 B 002 SOUND2(CALL3091)  
 B 002 SOUND3(CALL2571)  
 B 002 SOUND4(CALL3293)  
 B 002 SOUND6(CALL3631)  
 B 002 SOUND7(CALL5159)  
 B 002 SOUND8(CALL2230)  
 B 002 SOUND9(CALL5548)  
 A 006 SPACE MUSIC  
 B 002 TONE TEST.X  
 A 004 TONE.TEST  
 A 007 WEIRD NOISES  
 B 002 WEIRD NOISES.DBJ

SECTORS FREE:167 USED:393 TOTAL:560

256 CATALOG DISK  
DISK VOLUME 254

SLOT 6 DRIVE 1

A 0002 @ Christella Enterprise @  
 \*B 010 @ASM AIDE  
 \*B 046 @CONVERTING  
 \*B 024 @FEATURES  
 \*B 017 @OVERVIEW  
 \*B 015 @TECH NOTES  
 B 033 A.PIC  
 \*B 017 AUDREY  
 B 033 B.PIC  
 B 033 C.PIC  
 \*A 002 CONNIE  
 B 033 D.PIC  
 \*B 007 DKEY  
 B 033 E.PIC  
 B 033 F.PIC  
 B 033 G.PIC  
 A 010 HELLO  
 A 003 HELLO.NO DOC  
 A 006 MENU  
 \*B 002 ONEK.//E  
 \*B 002 ONEK.II+  
 \*A 003 ONEK.TESTER  
 \*I 014 ONEK13  
 A 011 SLIDE.SHOW  
 \*B 007 SUBS  
 \*B 007 VERT

SECTORS FREE:60 USED:500 TOTAL:560

257 CATALOG DISK  
DISK VOLUME 020

SLOT 6 DRIVE 1

A 0002 @ Christella Enterprise @  
 B 030 @ABOUT ONE-KEY DOS  
 B 020 @CEEMAC  
 B 010 @CEEMAC SUPPORT  
 B 028 @LINER NOTES  
 B 018 @PERSONAL DOMAIN SOFTWARE  
 I 002 APPLESOFT  
 B 013 AUDREY  
 B 026 CEEHI  
 B 026 CEELD  
 A 002 HELLO  
 B 033 HIRES  
 A 006 MESSAGE  
 B 002 MVFP  
 B 026 PDOC  
 B 043 SPARKEE  
 A 002 SPARKEE (C)  
 A 006 START.A  
 I 005 START.I

SECTORS FREE:196 USED:364 TOTAL:560

258

CATALOG DISK  
DISK VOLUME 018

SLOT 6 DRIVE 1

A 002 @ Christella Enterorise @  
 B 044 ABOUT ARTHUR  
 B 020 ABOUT BROOKE BOERING'S SCORES  
 B 026 ABOUT CEEMAC  
 B 020 ABOUT FISHTANK  
 B 038 ABOUT JP MCMILLAN'S SCORES  
 B 028 ABOUT VAGABONDO  
 B 038 ABOUT W. MIKE BENDIX'S SCORES  
 I 002 APPLESOFT  
 B 030 CEEHI  
 B 018 CEELD  
 A 002 CHRISTELLA  
 A 002 FIRE ORGAN (C)  
 B 034 HIRES  
 A 006 MESSAGE  
 B 031 PDOC  
 B 019 PRODUCT ANNOUNCEMENT  
 B 038 SCORES  
 B 014 SHAPES  
 A 005 START.A  
 I 005 START.I

SECTORS FREE:74 USED:486 TOTAL:560

259

CATALOG DISK  
DISK VOLUME 254

SLOT 6 DRIVE 1

A 002 @ Christella Enterorise @  
 B 030 @ABOUT ONE-KEY DOS  
 B 020 @CEEMAC  
 B 010 @CEEMAC SUPPORT  
 B 028 @LINER NOTES  
 B 018 @PERSONAL DOMAIN SOFTWARE  
 I 002 APPLESOFT  
 B 013 AUDREY  
 B 026 CEEHI  
 B 026 CEELD  
 A 002 HELLO  
 B 033 HIRES  
 A 006 MESSAGE  
 B 002 MVFP  
 B 026 PDOC  
 B 043 SPARKEE  
 A 002 SPARKEE (C)  
 A 006 START.A  
 I 005 START.I

SECTORS FREE:196 USED:364 TOTAL:560

CEEMAC

CATALOG DISK  
DISK VOLUME 254

SLOT 6 DRIVE 1

\*A 002 SAMPLE MASTER 3.3  
 \*I 002 APPLESOFT  
 \*A 005 START.A  
 \*I 005 START.I  
 \*B 034 HIRES  
 \*B 030 CEEHI  
 \*B 018 CEELD  
 \*B 014 SHAPES  
 \*B 038 SCORES  
 \*B 027 PDOC  
 \*B 020 ABOUT BROOKE BOERING'S SCORES  
 \*B 034 ABOUT JP MCMILLAN'S SCORES  
 \*B 034 ABOUT W. MIKE BENDIX'S SCORES  
 \*B 022 ABOUT CEEMAC  
 \*B 040 ABOUT ARTHUR  
 \*B 016 ABOUT FISHTANK  
 \*B 024 ABOUT VAGABONDO  
 \*B 015 PRODUCT ANNOUNCEMENT

SECTORS FREE:116 USED:444 TOTAL:560